silent 700
electronic data terminals

Model 703 Data Terminal

User's Manual

TEXAS INSTRUMENTS

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Changes may be made periodically to the information in this publication. Such changes will be incorporated in new editions of this manual.

Your suggestions and comments on this product and the publications are welcomed. Please use the Product Comment Sheets provided in the back of this manual to send us your comments.

Record the serial number and purchase date in the spaces provided below. The serial number is on the label mounted on the bottom of the terminal. All correspondence concerning your terminal should include both the serial number and the date you purchased it.

Model 703 Data Terminal _____ _____
Serial Number Purchase Date

Model 703 Data Terminal User's Manual
TI Part No. 2310451-0001
Original Issue: 31 May 1983
Revision B: 31 May 1986

WARNING

This data terminal generates and uses radio frequency energy. If not installed and used properly, that is in accordance with this user's manual, it may cause interference to radio or television reception. It has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential environment. However, there is no guarantee that interference will not occur in a particular installation. If this data terminal does cause interference to radio or television reception, which can be determined by turning it off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- **Reorient the receiving antenna with respect to the data terminal.**
- **Relocate the data terminal with respect to the receiver.**
- **Plug the data terminal into a different outlet so that the receiver and the data terminal are on different branch circuits.**

If necessary the user should also consult the data terminal supplier or an experienced radio/television technician for additional suggestions. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: *How to Identify and Resolve Radio-TV Interference Problems.* **This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4.**

Preface

This manual will help you learn to set up, operate, and provide routine care for your Texas Instruments Silent 700* Model 703 Data Terminal. Even if you have no experience operating a data terminal, you will find that your Model 703 is easy to operate and understand.

We suggest that you read the following descriptions of the chapters in this manual. Depending on your level of experience with data terminals, you may decide to skip some of this information.

Chapter 1 — Getting Started. This chapter describes how to prepare your terminal for operation. At the end of the chapter the terminal will be ready for operation. The options that are available on the Model 703 are also described here.

Chapter 2 — Using Your Terminal. This chapter shows you how to set up and use your terminal to communicate with a computer or some other computer-based device. The chapter also discusses the operation of the terminal when it is not communicating with an external device.

Chapter 3 — Learning More about Your Terminal. This chapter reviews the keyboard and terminal controls, explains the status lights and audible status indications, and shows you how to set the operating variables.

Chapter 4 — Care and Cleaning. This chapter provides adjustment and cleaning procedures for your terminal.

Chapter 5 — Before Calling for Service. A Problem Solving Guide is provided in this chapter to help you decide what to do when the terminal is not performing as expected.

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Appendix A — ASCII Code. This appendix shows the USASCII code for each printable character and each control character.

Appendix B — EIA Interface Signals. This appendix lists each EIA interface signal used by the Model 703 terminal.

Appendix C — Specifications. This appendix presents mechanical, electrical, and environmental specifications for the Model 703 Data Terminal.

Appendix D — International Keyboards. This appendix presents keyboard layouts for international versions of the Model 703 Data Terminal.

Glossary — This glossary defines many of the technical words and phrases found in this manual.

At certain times in the text we will use the following symbol in the margins:

Pay particular attention to the information next to these keys. They're used to denote "key" information.

The following additional publications are available for the Model 703 Data Terminal.

Model 703/707 Maintenance Manual (TI Part No. 2310453-0001) provides installation and basic operating instructions, theory of operation, communication interface and problem solving information, parts lists, assembly drawings, and schematics required to maintain the Model 703 Data Terminal and the Model 707 Data Terminal.

Model 703/707 Quick Reference Card (TI Part No. 2310461-0001) provides handy reference data for the operator.

Contents

Preface iii

1 Getting Started 1-1
Introduction 1-3
Unpacking 1-3
Finding a Place for Your Terminal 1-4
Providing Power to the Terminal 1-4
Connecting the Data Interface 1-6
Loading Paper 1-9
Options 1-10
Conclusion 1-11

2 Using Your Terminal 2-1
Introduction 2-3
Terminal Configuration 2-3
Turning on Your Terminal 2-9
Last Character Visibility 2-11
Communications Requirements 2-11
Typical Local Device Communications 2-12
Typical Remote Device Communications 2-13
Using a Computerized Information Service 2-14
Command Mode Description 2-16
Conclusion 2-17

3 Learning More About Your Terminal 3-1
Introduction 3-3
The Operator's Panel 3-3
The Full-ASCII Keyboard 3-4
Special Keys 3-7
Status Lights 3-14
Audible Tones 3-16
Conclusion 3-17

4 Care and Cleaning 4-1
Cleaning Outside Surfaces 4-3
Print Contrast Adjustment 4-3
Replacing the Printhead 4-4

5 Before Calling for Service 5-1
Introduction 5-3
Problem Solving Guide 5-4

Appendixes

A ASCII Code

B Hardware Interface Signals

C Specifications

D International Keyboards

Glossary

Index

1

Getting Started

Introduction 1-3
Unpacking 1-3
Finding a Place for Your Terminal 1-4
Providing Power to the Terminal 1-4
Connecting the Data Interface 1-6
Local Device Interface 1-7
External Modem Interface 1-8
Loading Paper 1-9
Options 1-10
Auto-Access Cartridge Option 1-10
Carrying Case Option 1-11
Conclusion 1-11

INTRODUCTION

This chapter shows you how to unpack your new Texas Instruments Model 703 Data Terminal and prepare it for operation. At the end of this chapter you'll find a description of two options that have been specially designed for your terminal.

2310451-1

UNPACKING

The shipping carton contains this manual, the terminal, a 30 m (100 ft) roll of thermal printing paper, and a power cord with a calculator-type transformer for connection to an ac power outlet. An unpacking procedure is printed on the shipping carton.

We recommend that you save the shipping carton and packing material for return shipment, in case repair becomes necessary.

Options (the Auto-Access Cartridge and carrying case) are packed separately.

FINDING A PLACE FOR YOUR TERMINAL

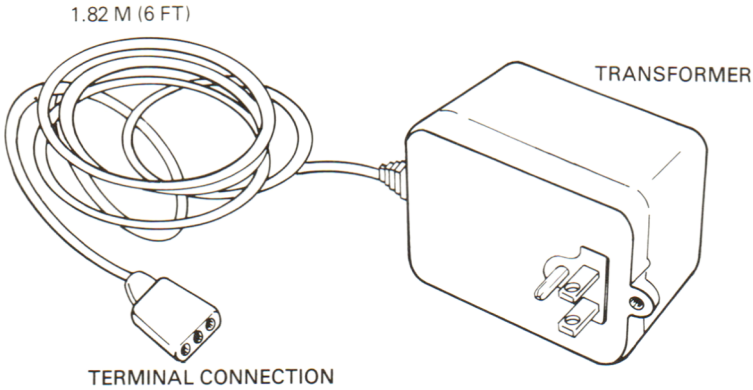
Here are some things to consider when you're deciding where you want to locate your terminal.

- Generally speaking, your terminal can be operated in any room where the temperature and humidity are comfortable enough for you to work.
- Locate your terminal (and your supply of thermal paper) away from direct sunlight. In extreme cases, the heat generated by long periods of direct sunlight can damage thermal paper.
- The terminal should sit on a flat surface (a desk or table).
- Locate the terminal near an appropriate ac power outlet.
- Locate the terminal close enough to the computer, printer, or other device, to allow your interface cable to reach.

PROVIDING POWER TO THE TERMINAL

The Model 703 that is marketed in the US uses a power cord wall transformer to plug into a 120-Vac (90 to 134 Vac) power outlet. The international version of the terminal uses either of two power cord transformers. One allows it to plug into a 220-Vac (187 to 320 Vac) power outlet. The other allows it to plug into a 230/240-Vac (196 to 264 Vac) power outlet.

Check the power cord wall transformer. Ensure that the ac input voltage specified on the transformer matches the voltage available at the power outlet.



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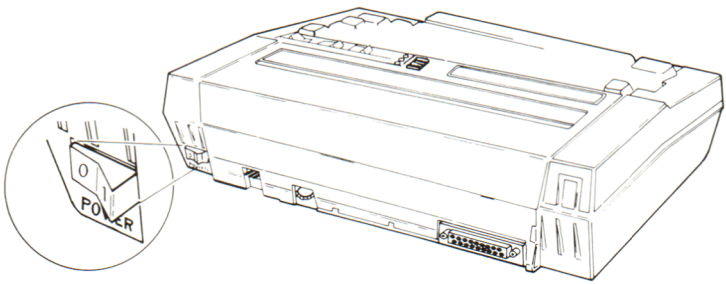
To install the power cord, use the following procedure.

1. Place the **POWER** switch in the off position while connecting the power cord. The power switch positions are labeled **0** and **1**; the **0** position is off, and the **1** position is on.



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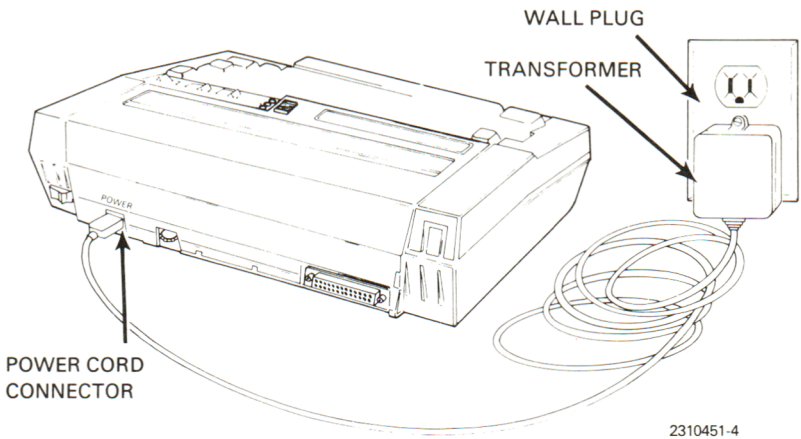
2. Plug the power cord into the connector at the rear of the terminal.



3. Plug the transformer into an appropriate ac power outlet.

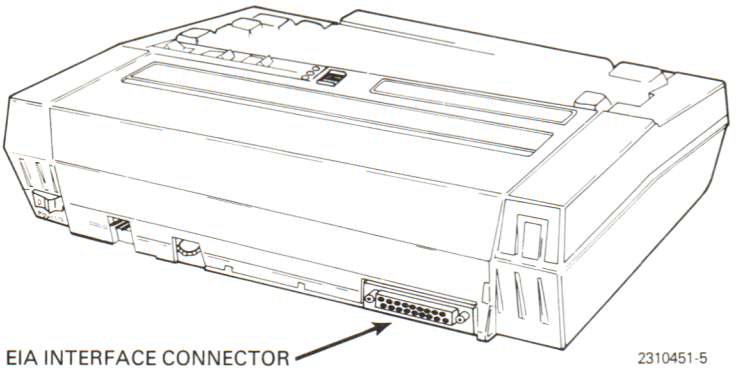
CONNECTING THE DATA INTERFACE

The standard Model 703 communications interface is an EIA interface. You can set up the Model 703 to interface directly with a computer, printer, or data terminal in the same location (a local device). Or, you can set it up to interface with a remote device through an external modem. The cables that are required for either local or remote operation are customer options. Refer to Appendix B for interface cable wiring information.

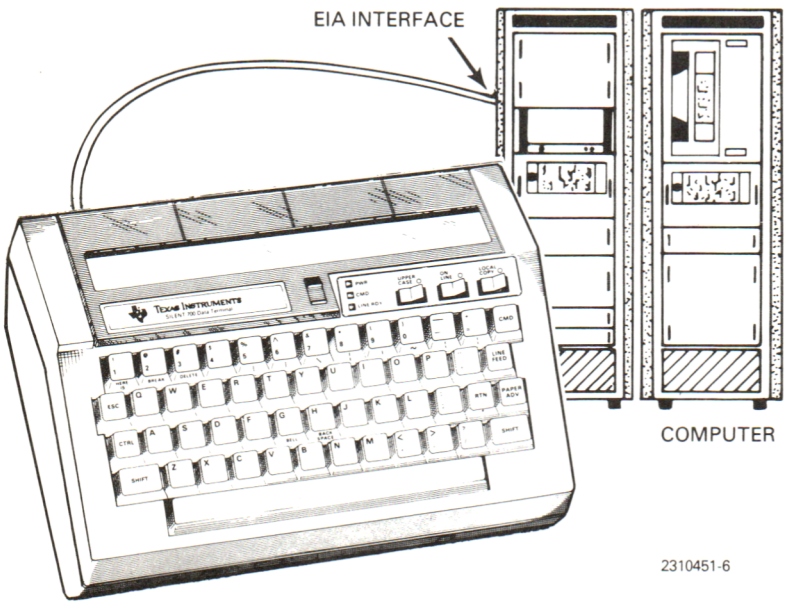
To conform to FCC regulations, a shielded cable must be used for EIA communications.

Local Device Interface

1. Connect one end of a shielded interface cable to the EIA interface connector at the rear of the terminal.



2. Connect the other end of the interface cable to the EIA interface connector on the other device.

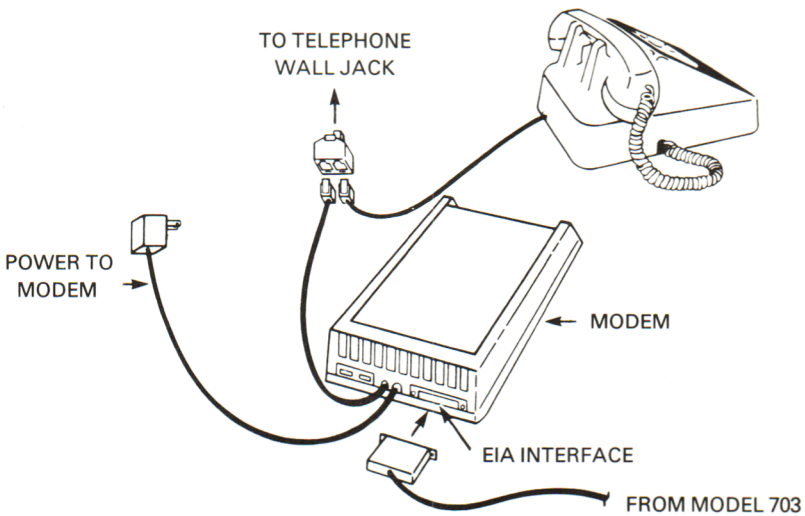


External Modem Interface

1. Determine that the external modem is compatible with the modem at the remote site (generally this is a Bell 103-type modem). The Model 703 is capable of interfacing with an originate/auto-answer modem, an originate-only modem, or an answer-only modem. The modem shown in the figure below is a Texas Instruments Model 451 Modem.

2. Connect one end of an interface cable (TI Part No. 2207634-0001 or 993205-0001) to the EIA interface connector on the rear of the terminal.

3. Connect the other end of the interface cable to the external modem. This interface cable is available as an option.



2310451-7

LOADING PAPER

The Model 703 Data Terminal can use any commercially available, 216 mm (8.5 in) wide, thermographic printing paper.

For optimal print quality, use Texas Instruments thermal printing paper. This paper is available in single 30 m (100 ft) rolls, case or pallet lots, as TI Part No. 972603.

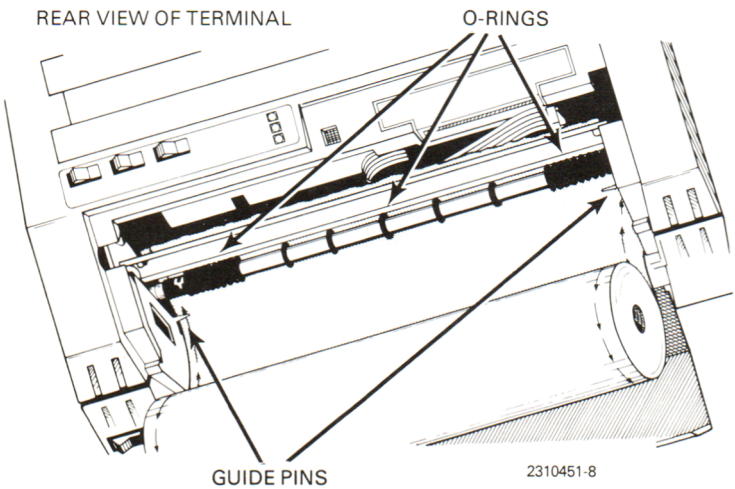
1. Place the **POWER** switch in the on position.

2. Slide the paper compartment latch to the rear and open the paper compartment cover. If there is no paper in the terminal go to step 4.

3. To unload paper remaining in the terminal, lift the used roll from the paper compartment and pull it evenly toward the rear of the terminal.

4. Rest the new paper roll on the inside of the paper compartment cover. *Be sure that the paper feeds from the bottom of the roll toward the front of the terminal.*

5. Feed the leading edge of the paper under the plastic guide pins and into the nip of the O-rings on the paper feed roller.



6. Press the **PAPER ADV** key until the paper is even with the top of the printhead.

7. Place the paper roll in the paper compartment. Reroll any excess paper onto the paper roll to remove slack between the paper roll and the paper feed roller. Make sure the paper is rerolled evenly.

8. Close the paper compartment cover. Slide the paper compartment latch toward the front to secure the cover.

OPTIONS

There are two options available for the Model 703 Data Terminal, in addition to the optional interface cable already mentioned.

Auto-Access Cartridge Option

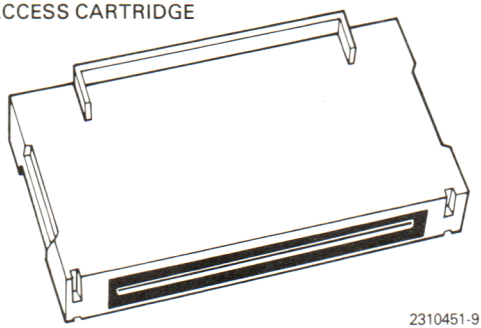
The Auto-Access Cartridge option is a user-installed, plug-in cartridge designed to enhance and extend the Model 703's standard features. It allows you to:

- Automatically log on a computer
- Create a directory of telephone numbers and log on sequences*
- Set up the terminal's configuration
- Print a report on the terminal's configuration

*Telephone numbers, stored in the Model 703 terminal, cannot be dialed from the terminal.

The cartridge connector is located beneath the paper compartment cover, near the left center of the terminal. The cartridge option kit (TI Part No. 2310530-0001) includes a user's manual that explains its setup procedure and gives examples of typical applications.

AUTO-ACCESS CARTRIDGE



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Carrying Case Option

The Model 703 fits easily in most standard 76.2 mm (3 in) and 127 mm (5 in) briefcases.

A specially designed carrying case (TI Part No. 2310470-0001) is available as an option if you prefer to carry the terminal separately. The carrying case holds the terminal, the power transformer, an EIA cable, an extra roll of thermal paper, and this user's manual.

CONCLUSION

The best way to ensure that your data terminal will give you reliable service is to provide it with an adequate environment, a proper source of power, a proper communication interface, and quality thermal paper. Each of these elements are important now, the first time you prepare your terminal for operation, and throughout its life. In Chapter 2, "Using Your Terminal," you will learn how to configure your terminal and how to use it to send or receive information.

2

Using Your Terminal

Introduction 2-3
Terminal Configuration 2-3
Online/Offline Mode of Operation 2-4
Uppercase or Lowercase Printing 2-5
Local Copy of Transmitted Data 2-5
Setting Parity 2-6
Selecting the Print Configuration 2-7
Default Print Configuration Switch 2-7
Print Configuration Control Sequence 2-8
Print Configuration Escape Sequence 2-8
Turning on Your Terminal 2-9
Sights and Sounds 2-9
Power-up Self-test 2-10
Last Character Visibility 2-11
Communication Requirements 2-11
Communication Mode 2-11
Transmission Speed 2-12
Typical Local Device Communications 2-12
Typical Remote Device Communications 2-13
Using a Computerized Information Service 2-14
Documentation 2-15
Logging On and Off 2-15
Command Mode Description 2-16
Conclusion 2-17

INTRODUCTION

This chapter provides general information on setting up and operating your terminal. This information must be used in conjunction with the instructions provided for the device or system your terminal is communicating with.

Let's begin with some basic assumptions.

- Your terminal is plugged into a proper ac voltage source.
- You have an ample supply of quality thermal paper installed.
- Your terminal is connected to a local device or an external modem, with the proper interface cable.

TERMINAL CONFIGURATION

There are five operating variables that have to be set up before you operate your terminal. These five variables are:

- Online or offline mode of operation
- Uppercase or lowercase printing
- Local copy or no local copy
- Even, odd, mark, or space parity
- Standard or compressed printing

These are discussed in the following paragraphs.

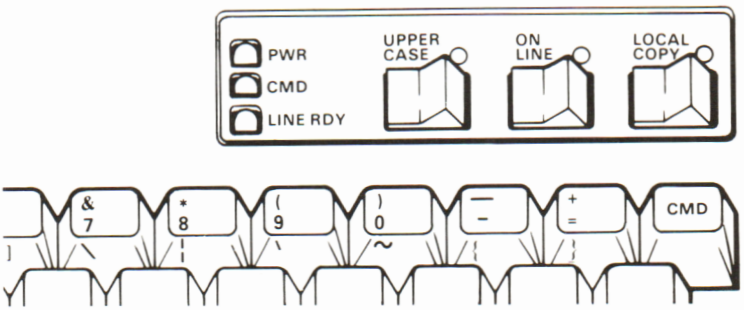
Online/Offline Mode of Operation

The **ONLINE** switch is in the middle of the group of three switches above the keyboard.

Simply stated, you go *online* to communicate with another device, and *offline* to operate your terminal by itself. When the **ONLINE** switch is moved toward the position marked with a dot, the terminal is in the online mode. When the switch is moved away from this position, the terminal is in the offline mode. (This is also commonly called the local mode.)

When the terminal is connected to an Auto-Answer Modem, the modem will answer incoming calls. If the terminal is online at this time, communication will be established.

Set the **ONLINE** switch to the offline position until you're ready to establish communication with another device.



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Uppercase or Lowercase Printing

The **UPPER CASE** switch is the leftmost switch in the group of three switches above the keyboard.

The **UPPER CASE** switch operates very much like the shift lock key on a typewriter, except that it only affects the alphabetic characters (a through z) on your keyboard. When this switch is moved toward the position marked with a dot, alphabetic characters are encoded to uppercase. When the switch is moved away from this position alphabetic characters are encoded to lowercase, unless the **SHIFT** key is pressed. Set the **UPPER CASE** switch as needed for your particular application.

Local Copy of Transmitted Data

The **LOCAL COPY** switch is the rightmost switch in the group of three switches above the keyboard.

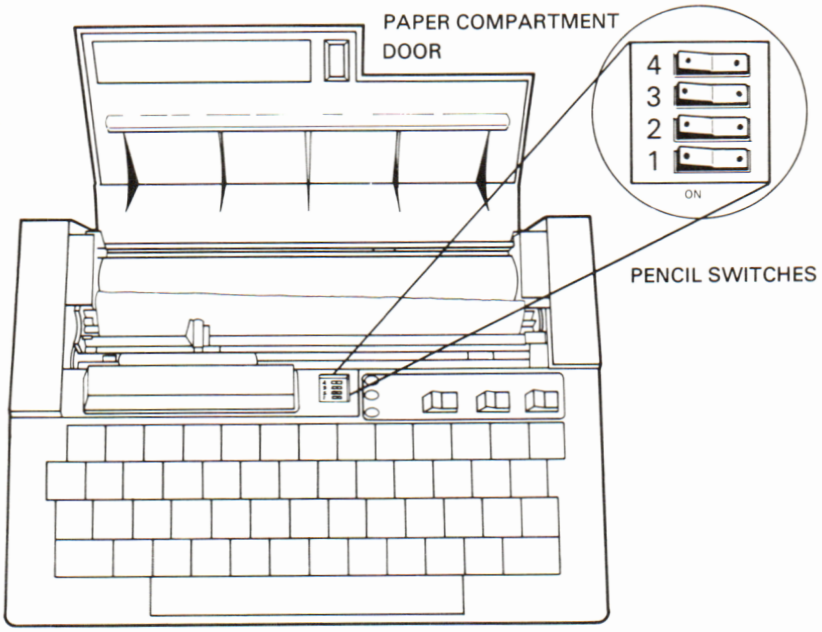
Moving this switch toward the position marked with a dot enables local copy. Moving the switch away from this position disables local copy. When **LOCAL COPY** is selected while you're online, every letter, number, or symbol that you enter on the keyboard is simultaneously printed on your terminal's printer. If local copy is not selected the printer only prints the information that you receive from another device.

The **LOCAL COPY** switch only needs to be enabled if you are sending data to a computer system that *does not* use echo-plex. (Echo-plex is defined in the glossary.) If the terminal doesn't print what you type, or if you see two characters for every one you type, change the position of the **LOCAL COPY** switch. When the terminal is offline, local copy is automatic.

Setting Parity

Parity is set with two of the four *pencil switches* (the switches labeled 1 and 2) located beneath the paper compartment cover, to the right of the cartridge slot. Pencil-switches are so called because their position is selected with a pointed object like the point of a pencil or a bent paper clip.

The Model 703 transmits data with even, odd, mark, or space parity. A label in the paper tray shows the switch settings for each type of parity. The switch settings are also shown below.



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Model 703 Parity, Pencil Switch Settings

Parity Selected	Switch 1	Switch 2
Even	Off	Off
Odd	On	Off
Mark	On	On
Space	Off	On

The Model 703 does not check the parity of the data it receives but many devices do; so always set parity to meet the need of the device or system you're communicating with. When in doubt, try even parity first; it's the most common.

Selecting the Print Configuration

The Model 703 terminal prints 10.2 characters per inch (cpi) (80 characters per line) in its standard print configuration. In its compressed print configuration the terminal prints 17.0 cpi (132 characters per line).

The terminal's print configuration can be selected three ways:

- With the default print configuration switch before power up
- With a control sequence from the keyboard
- With an escape sequence from the communications line

Default Print Configuration Switch

The default print configuration switch is switch number 3 in the group of four pencil switches located beneath the paper compartment cover. De-

fault means, that if this switch is placed in its **ON** position before power-up, the terminal will go into a compressed print configuration when it is powered-up. If the switch is placed in its **OFF** position before power-up, the terminal will go into a standard print configuration when it is powered-up.

Print Configuration Control Sequence

After power-up the print configuration can be changed from its default configuration by pressing and holding the **CTRL** key and the **SHIFT** key and then pressing the **RTN** key.

You can do this while the terminal is online or offline.

Print Configuration Escape Sequence

When the terminal is online, the print configuration can be changed by the device you're communicating with. To do this the device sends one of the following *escape sequences*. An escape sequence is a command, received over the communication line, that begins with the **ESC** (escape) character.

To select 10.2 cpi:
[ESC] [P] [C] [ESC] [\] or [ESC] [P] [C] [\]

To select 17.0 cpi:
[ESC] [P] [D] [ESC] [\] or [ESC] [P] [D] [\]

The brackets ([ ]) are not part of the escape sequences; they are only shown to separate the characters in each sequence.

Note that there are two escape sequences given for each print configuration selection. They are identical except for the second **ESC** character in the first sequence. This option was provided to make the terminal compatible with certain other devices.

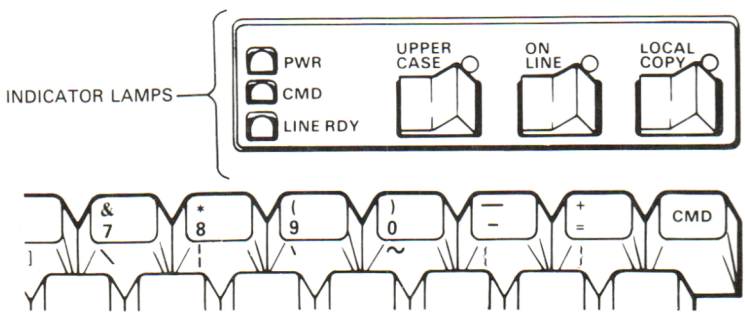
Your terminal's print configuration affects only your printer, so the setting is only a consideration for received data.

TURNING ON YOUR TERMINAL

When you place the **POWER** switch in the on position, the terminal performs a test of its memory. During this self-test, as during every other terminal operation, there are certain sights and sounds that you can associate with normal performance.

Sights and Sounds

Three status lights are located above the keyboard, to the left of the **UPPER CASE** switch. The lights are labeled **PWR** (power), **CMD** (command), and **LINE RDY**. These status lights, along with audible *beeps* from the terminal, are your primary indications that everything is (or is not) working properly. Each of the visual and audible indications are explained in Chapter 3.



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Power-up Self-test

If your terminal power is already on, place the **POWER** switch in the off position. To verify the visual and audible indications that accompany a successful self-test, return the **POWER** switch to the on position and observe the following.

This entire test sequence takes only a few seconds. Watch the status lights while you are operating the **POWER** switch so you don't miss an indication.

1. As soon as you turn the **POWER** switch on, all three of the status lights go on. This indicates that the power-up self-test is in progress.

2. The **CMD** and **LINE RDY** lights go out, and the **PWR** light remains lit.

3. The printhead mechanism moves against the left margin and momentarily chatters (the chattering is normal) against its stop.

4. The terminal prints its model number 703.

5. At the successful completion of the memory test the terminal beeps a short audible tone.

6. The printhead moves to the left-hand margin and the paper advances one line.

A failed test is usually indicated by the three status lights remaining lit. If this happens, or if you observe another improper indication:

1. Make sure the terminal is plugged into a good power source.

2. Repeat the self-test to verify the bad indication(s).

3. Check the Problem Solving Guide in Chapter 5.

4. Contact your service representative.

LAST CHARACTER VISIBILITY

As you use your terminal you'll notice that every time you type a character and don't immediately continue typing, the printhead moves to the right, to allow you to see the last character you entered. We call this feature last character visibility. When you resume typing, the printhead will move back into place. The next character you type will be entered next to the last character.

COMMUNICATION REQUIREMENTS

There are two requirements to consider before attempting to communicate with another device, either directly or over a telephone line.

Communication Mode

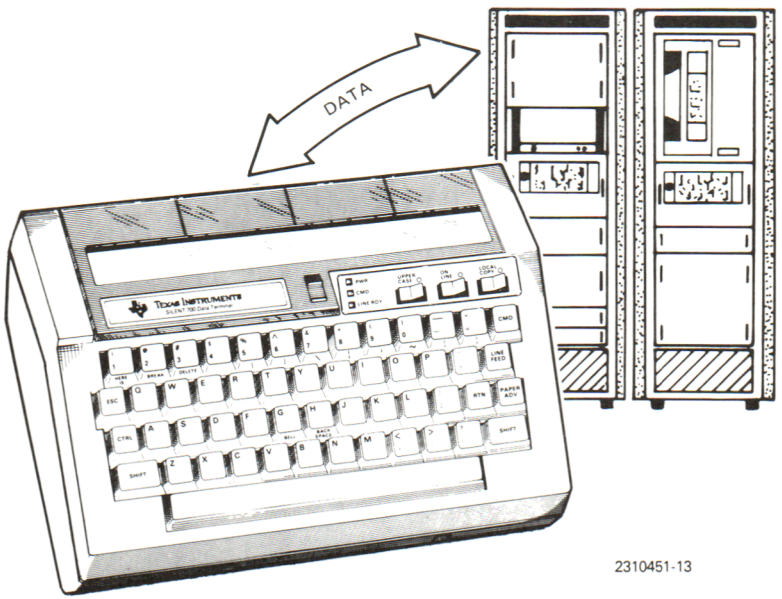
The Model 703 Data Terminal operates in a *full-duplex communication mode*. This means that data is transmitted and received simultaneously. The device that you're communicating with must be compatible with full-duplex operation.

Transmission Speed

The Model 703 Data Terminal operates at a speed of 300 bits per second (bps). This is also called 300 *baud*. The device that receives data from you must be capable of receiving data at this speed, and all data that your terminal receives must be transmitted at this speed.

TYPICAL LOCAL DEVICE COMMUNICATIONS

The Model 703, without an external modem, connects to a local device such as a minicomputer, data logger, or computer. A common application is a console for a computer or minicomputer. In this application the Model 703 is the primary means of data input to the computer and data output from the computer.

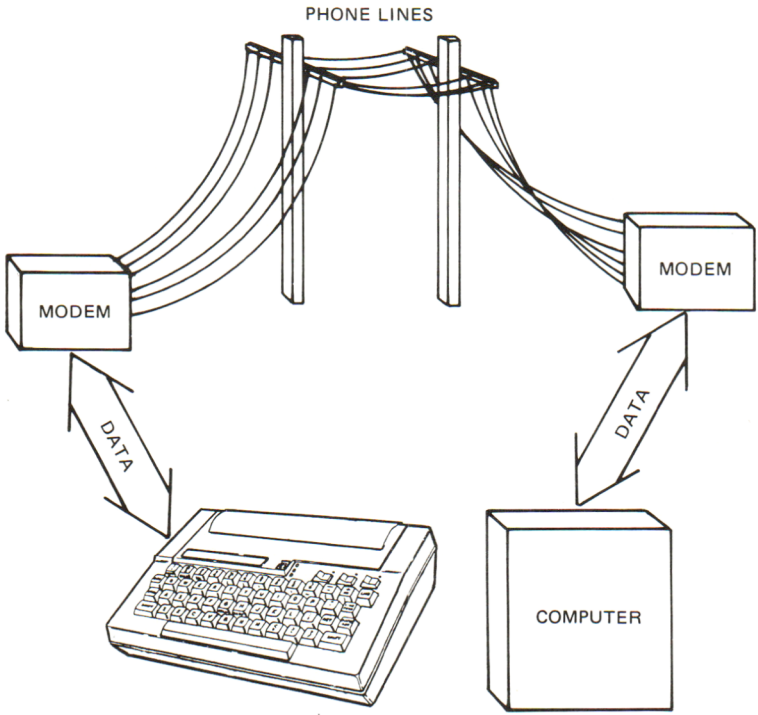


2310451-13

In applications like these the terminal is normally kept online to receive data or messages from the device. When data is input from the terminal, it is input in accordance with the normal operating procedures of the device. The user's manual (operating manual) for the device tells you exactly how to establish and maintain this communication link.

TYPICAL REMOTE DEVICE COMMUNICATIONS

An external modem is used with the Model 703 to allow telephone communication with a remote device.



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In a typical data communication link over a telephone network:

- The telephone link may be established by either party.

  If your application requires you to establish the communication link, you must have a telephone connected to the external modem. If your communication link will always be established by the operator of the remote device, the external modem must be an auto-answer type modem and the terminal must be kept online.

- The telephone link is normally maintained only long enough to transfer the desired information.

- The telephone link is usually disconnected by the party that established it, after the desired information is transferred.

  While this arrangement is typical, it is by no means the only possibility. Many data terminals are, for example, connected full-time to their *host computer*.

USING A COMPUTERIZED INFORMATION SERVICE

Data terminal users commonly subscribe to computerized information services for services such as:

- News, weather, and sports information
- Financial information
- Entertainment information

- Electronic mail services
- Personal computing services

This list could go on, and more items are added to it everyday. For just this reason, we want to give you an idea of what is normally required to connect your data terminal to one of the large information computers. Bear in mind that exact procedures differ for each information service. The following can be considered typical.

Documentation

Once you have registered as a subscriber to an information service, you receive a booklet that gives you the exact procedures that allow you to access that service. You also receive a *password* or identification number that will be requested as part of your *log on* procedure.

Logging On and Off

1. Place your terminal online.
2. Dial the telephone number of the service.
3. You hear an answer tone, and when the connection is made a message may be printed out on your terminal. Messages may request your password or your identification number, or the identification number or letter of your terminal.
4. When the computer verifies that you are a registered user, it sends a message to tell you that you are connected and can use the system.
5. The computer often sends out a *menu* that gives you a choice of accessing particular areas of information. For example, you may type a particular letter or

number from the menu to indicate that you want a current stock market quotation. The computer would then send a message asking which stock quotation you want. You would reply with the abbreviated name (the symbol) of the stock.

6. After you have received the desired information, log off the system. Again, each system has its own procedure. On some systems you may be requested to go offline, on others you may be required to type a word such as OFF, BYE, or LOGOFF.

7. Many services send a final message back saying THANK YOU, and telling you how much time you are charged with.

COMMAND MODE DESCRIPTION

The command mode is used to perform a test of the Model 703 printer. To begin the printer test:

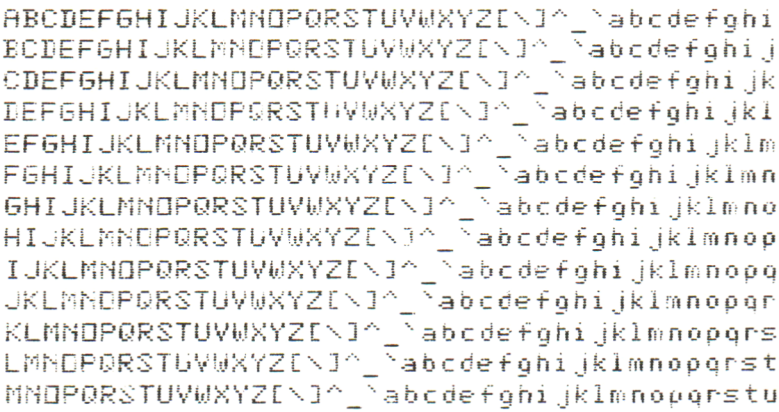
1. Make sure the **POWER** switch is on.

2. Press the **CMD** key.

3. Press the **T** key.

The test command initiates the *barberpole test*. The barberpole is a pattern of every printable character in every position across the paper.

To stop the barberpole test, press the **ESC** key.



BARBERPOLE TEST PATTERN

2310451-15

CONCLUSION

System dependencies (the needs of the other device) are a very large factor in the operation of a data terminal. For that reason the information in this chapter is general in nature. It must be used in conjunction with the instructions provided for the device or system that your terminal is communicating with. The next chapter in this manual gives you additional information about your terminal's keyboard and controls.

3
Learning More About Your Terminal

Introduction 3-3
The Operator's Panel 3-3
The Full-ASCII Keyboard 3-4
Keyboard Color-Coding 3-4
Keyboard Operation 3-4
Uppercase 3-5
Unshifted 3-5
Shifted 3-6
Control 3-6
Keyboard Configuration Priorities 3-7
Automatic Character Repeat 3-7
Special Keys 3-7
CMD 3-8
CTRL 3-8
HERE IS 3-9
BREAK 3-9
DELETE 3-10
BELL 3-10
BACK SPACE 3-11
ESC 3-11
LINE FEED 3-12
RTN 3-12
PAPER ADV 3-13
Status Lights 3-14
PWR 3-14
CMD 3-14
LINE RDY 3-15
Audible Tones 3-16
Error Definitions 3-17
Receive Buffer Overflow Error 3-17
Keyboard Buffer Overflow Error 3-17
Invalid Keyboard Entry 3-17
Conclusion 3-17

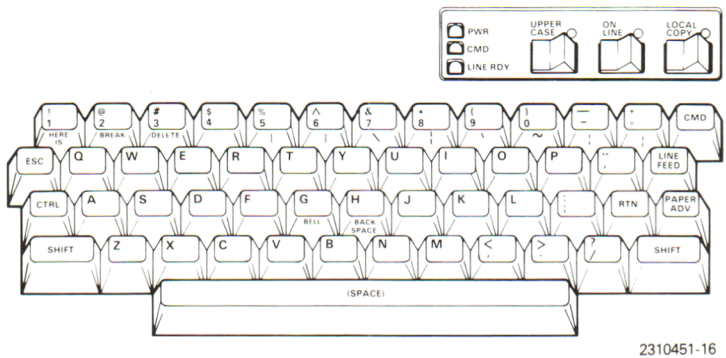
INTRODUCTION

This chapter familiarizes you with your terminal's keyboard and controls. You'll learn about key and switch functions, status lights, and audible tones. Becoming thoroughly familiar with the information in this chapter helps you to better understand the operation of your Model 703 Data Terminal.

THE OPERATOR'S PANEL

The operator's panel consists of a 52-key keyboard, 3 dual-position switches, and 3 status lights.

The figure below shows the standard US keyboard layout for the Model 703 Data Terminal. Keyboard layouts for eight international versions of this keyboard are in Appendix D.



The Model 703 Operator's Panel

THE FULL-ASCII KEYBOARD

The Model 703 has a full-ASCII keyboard that generates the 128 codes that make up the USASCII Code System. There are 47 code-generating keys, these are the alphabet, numerals, symbols, space, **ESC** (escape), **LINE FEED**, and **RTN** (return) keys. Three keyboard-control keys govern the code-generating keys, these are the two **SHIFT** keys and the **CTRL** (control) key. The **UPPER CASE** switch, located above the keyboard, also performs a keyboard-control function.

Keyboard Color-Coding

The Model 703 keyboard is color-coded as follows.

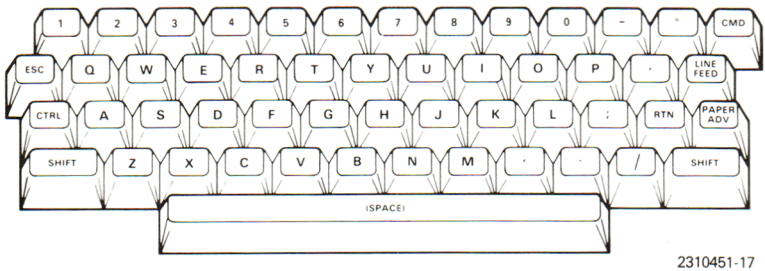
- Each key has a tan background color.
- Legends on regular character-generating keys are dark brown.
- Legend on the **CTRL** key is blue. The legends on the character keys that are used in conjunction with the **CTRL** key are also blue.
- Legends on the **ESC**, **CMD**, and **RTN** keys are orange.

Keyboard Operation

The keyboard-control keys, **SHIFT** and **CTRL**, and the **UPPER CASE** switch, control the operation of the keyboard in the following ways.

Uppercase

With the **UPPER CASE** rocker switch in the uppercase position, alphabetic keys are encoded as uppercase characters. This is similar to the shift lock key on a typewriter, except that the **SHIFT** key is needed to print or transmit the upper character on double character keys like the % symbol.

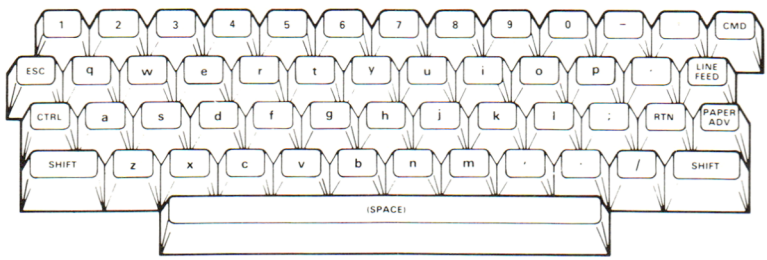


2310451-17

Uppercase Characters

Unshifted

When the **SHIFT** key is not used, and the **UPPER CASE** switch is not in the uppercase position, the alphabetic keys are encoded as lowercase letters.

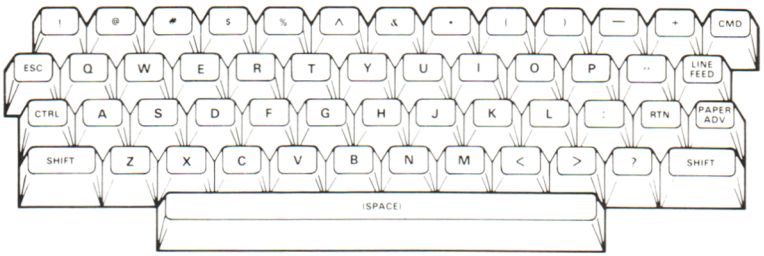


2310451-18

Unshifted Characters

Shifted

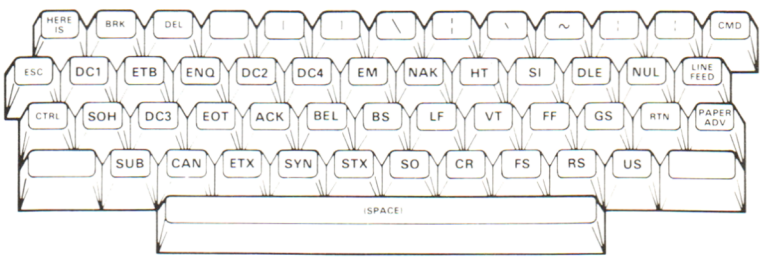
When the **UPPER CASE** rocker switch is not in the **UPPER CASE** position, either **SHIFT** key may be pressed to encode the alphabetic keys as uppercase letters. This also encodes the symbols, instead of the numerals, on the top row of keys.



Shifted Characters 2310451-19

Control

The ASCII control characters, these eight symbols: [,], \, ¦, \, ~, {, }, plus **HERE IS**, and **BREAK** are encoded by pressing and holding the **CTRL** key while pressing the appropriate character key. The **CTRL** key, and each of the labeled keys that are used in conjunction with the **CTRL** key, are color-coded light blue. Your terminal can transmit each of the ASCII control characters shown below. The most frequently used control characters and symbols are labeled on the keyboard.



Control Characters 2310451-20

Note that the character-generating keys **ESC**, **LINE FEED**, **RTN**, and the space bar generate the same codes for all keyboard configurations.

Keyboard Configuration Priorities

If more than one keyboard-control key is pressed, the following priority is maintained.

- The **CMD** key has precedence over **CTRL**, **SHIFT**, and **UPPER CASE**.
- The **CTRL** key has precedence over **SHIFT** and **UPPER CASE**.
- The **SHIFT** key has precedence over **UPPER CASE**.

Automatic Character Repeat

All keys except **CTRL**, **SHIFT**, **HERE IS**, and **CMD** have an automatic character-repeat feature. This means that each one repeats its function, at ten characters per second, when held down for more than one-half second. The repeat feature of the **PAPER ADV** key allows the paper to advance, at approximately thirty lines per second, when it is held down for more than one-half second.

SPECIAL KEYS

The following is a description of each of the special keys on the Model 703 keyboard.

CMD

When the **CMD** (Command) key is pressed, with the terminal online or offline, the terminal goes into the command mode. If the terminal is online when you enter the command mode you interrupt any communication that was about to take place. If the printer is operating, the **CMD** light flashes until the printer is finished printing the information that the terminal has already received. When the printer is finished, the **CMD** light stays lit. The terminal is not able to receive or transmit any new data while in the command mode.

2310451-21

The Command Key

CTRL

The **CTRL** (Control) key is always used in combination with another key to transmit characters that perform special functions. *The* **CTRL** *key must always be pressed first and held down, while the character key is pressed.* Refer also to the Keyboard Operation section for a description of the **CTRL** key operation. The following labeled characters on your keyboard are used in conjunction with the **CTRL** key.

2310451-22

The Control Key

HERE IS

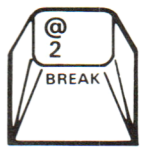
HERE IS is a communication control action. If the Auto-Access Cartridge is installed, and the answerback memory (ABM) has been programmed in the cartridge, the contents of the ABM are transmitted over the communication line when the **HERE IS** is pressed, while the **CTRL** key is held down.

2310451-23

The Here Is Key

BREAK

BREAK is a communication control action. When the **BREAK** key and the **CTRL** key are pressed simultaneously, the terminal transmits a space (*not* the same as pressing the space bar), until the keys are released. The break function lasts one-quarter second (minimum) or as long as **CTRL** and **BREAK** are held down.



2310451-24

The Break Key

DELETE

DELETE is an ASCII control character. When the **DELETE** key is pressed, while the **CTRL** key is held, the **DELETE** control character is transmitted. The reaction of the other device depends on how it is set up to react to the **DELETE** character.

2310451-25

The Delete Key

BELL

BELL is an ASCII control character. When the **BELL** key is pressed, while the **CTRL** key is held, the bell (a short audible tone) sounds on your terminal, and if the terminal is online the ASCII bell character is transmitted. This sounds a bell on the other device, if the device has that capability.

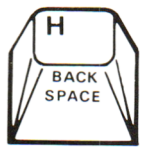
2310451-26

The Bell Key

If your terminal receives the ASCII **BELL** character from another device, the bell on your terminal sounds.

BACK SPACE

BACK SPACE is an ASCII control character. When the **BACK SPACE** key is pressed, while the **CTRL** key is held, the printhead on your terminal backs up one space, and if the terminal is online the ASCII **BACK SPACE** character is transmitted. On your terminal, the next printed character "overstrikes" (prints over) the last character. The other device's reaction to the **BACK SPACE** character is dependent on its setup.



2310451-27

The Back Space Key

ESC

The **ESC** (Escape) key is used to transmit an escape character. This key is also used to terminate the command mode.

2310451-28

The Escape Key

LINE FEED

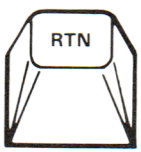
When your terminal is online, the **LINE FEED** key transmits the line feed character. If local copy is selected, the terminal is offline, or the terminal is online with an echo-plex system, the paper on your terminal advances vertically one line when you press the **LINE FEED** key.

2310451-29

The Line Feed Key

RTN

When your terminal is online, the **RTN** (Return) key transmits the CR (carriage return) control character. If local copy is selected and the terminal is offline, or the terminal is online with an echo-plex system, the printhead on your terminal is moved to the left margin when you press the **RTN** key.



2310451-30

The Return Key

PAPER ADV

When the **PAPER ADV** (Paper advance) key is pressed for less than one-half second, the thermal paper is advanced one line. When pressed for more than one-half second, paper advances at thirty lines per second, until the key is released. This key does not transmit a character to the other device, when the terminal is online.

2310451-31

The Paper Advance Key

STATUS LIGHTS

The three status lights located to the left of the **UPPER CASE** switch indicate the status of power to the terminal, the command mode, and the communication line signals.

PWR

The **PWR** (Power) light shows the status of power to the terminal.

On	When the **PWR** light is on the terminal has power applied.
Off	If the ac transformer is plugged into an ac power outlet and the **PWR** light is off, it indicates that the **POWER** switch is in the off position.
Flashing	A flashing **PWR** light indicates that the ac input power to the terminal is low (brown-out condition).

CMD

The **CMD** (Command) light shows the status of the command mode.

On	The **CMD** light is on when the **CMD** key is pressed, and the terminal goes into the command mode. The light stays on until the command mode is terminated.
Off	The **CMD** light is off when the terminal is not in the command mode, and you have not requested to enter the command mode by pressing the **CMD** key.

Flashing — If the **CMD** light is flashing, it indicates that a request to enter the command mode is pending. The light continues flashing until the terminal enters the command mode.

LINE RDY

The **LINE RDY** (Line Ready) light shows the condition of the data interface.

On — When the **LINE RDY** light is on it indicates that the following EIA interface signals are active, and the communication line is ready for data.

Signal Name*	EIA Interface Mnemonic
Data Set Ready	CC
Data Carrier Detect	CF
Data Terminal Ready	CD
Request To Send	CA
Clear To Send	CB

*These signals are defined in Appendix B. Each of the interface signal mnemonics are assigned by the EIA.

Off — When the **LINE RDY** light is off it indicates that the signals CC and CF are off, and data cannot be transmitted or received.

Flashing — When the **CMD** light is on and the **LINE RDY** light is flashing it indicates that the EIA signals that are necessary for data transmission are present, but the terminal is in the command mode. When the **LINE RDY** light is flashing and the **CMD** light is not on, it indicates that some of the signals that are necessary for data transmission are missing.

AUDIBLE TONES

The Model 703 produces two audible tones to indicate the completion of activities.

Short tone: A tone of less than one half-second indicates the normal termination of an operation.

Long tone: A one-second tone indicates that an error or an abnormal operating condition has been detected.

The following table describes the operating conditions that cause a tone to occur.

Audible Tones

Signal	Cause
Short tone	1) An ASCII BEL character has been received. 2) The command mode has been entered. 3) The power-up self-test has been completed successfully. (This test is described in Chapter 2.)
Long tone	1) One of the following errors has been detected: a) Receive buffer overflow error b) Keyboard buffer overflow error 2) An invalid keyboard entry has been detected in the command mode.

Error Definitions

Receive buffer overflow error

The receive buffer in your terminal is a storage area for received data. Normally, as your terminal receives data, it moves data from this buffer and prints the data. If anything prevents the printer from operating, or if the buffer is filling faster than the printer can empty it, a receive buffer overflow occurs. Some data may be lost.

Keyboard buffer overflow error

The keyboard buffer in your terminal stores keyboard data that is being transmitted to another device or being printed. If your terminal is prevented from transmitting data while you are entering data, a keyboard buffer overflow occurs.

Invalid keyboard entry

The only command syntax recognized by the Model 703 terminal is the test command. If the command is not entered properly (as explained in Chapter 2) the terminal indicates an error.

CONCLUSION

After reading Chapters 1, 2, and 3 you should have a good understanding of your terminal's capabilities. This understanding, combined with the flexibility of the Model 703, makes your terminal a powerful communication tool.

The next chapter in this manual is an important one. Here you'll learn what you can do to keep your terminal operating properly.

4

Care and Cleaning

Cleaning Outside Surfaces 4-3
Print Contrast Adjustment 4-3
Replacing the Printhead 4-4

CLEANING OUTSIDE SURFACES

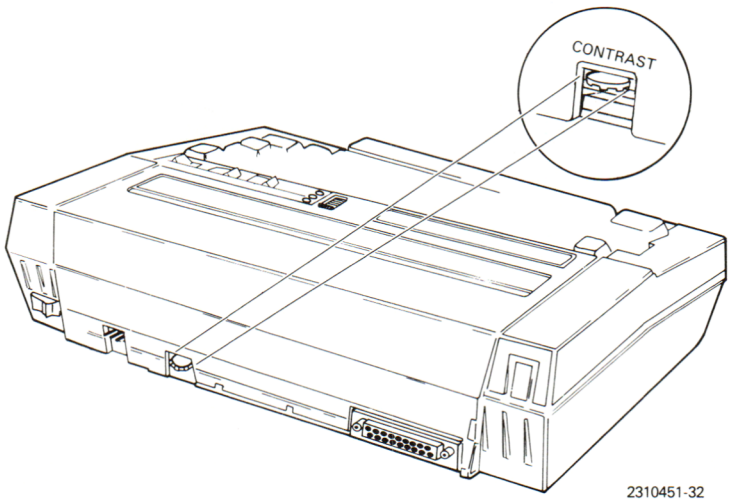
1. Turn the **POWER** switch off, unplug the power cord, and disconnect the communication cable(s).

2. Clean the exterior surfaces of the case with a soft, damp cloth or a sponge and any nonabrasive household-type detergent.

Spilling liquids on the keyboard can cause severe damage to electrical components.

PRINT CONTRAST ADJUSTMENT

1. Locate the thumbwheel labeled **CONTRAST** on the back of the terminal.



2. For *darker* print, rotate the thumbwheel as indicated (toward +) while printing, until the character image is dark enough.

   If the print blurs, you have rotated the thumbwheel too far. Turn it in the opposite direction.

3. For *lighter* print, rotate the thumbwheel as indicated (toward —) while printing, until the character image is light enough.

REPLACING THE PRINTHEAD

Your Model 703 Data Terminal is equipped with a printhead that you can remove and replace, when necessary.

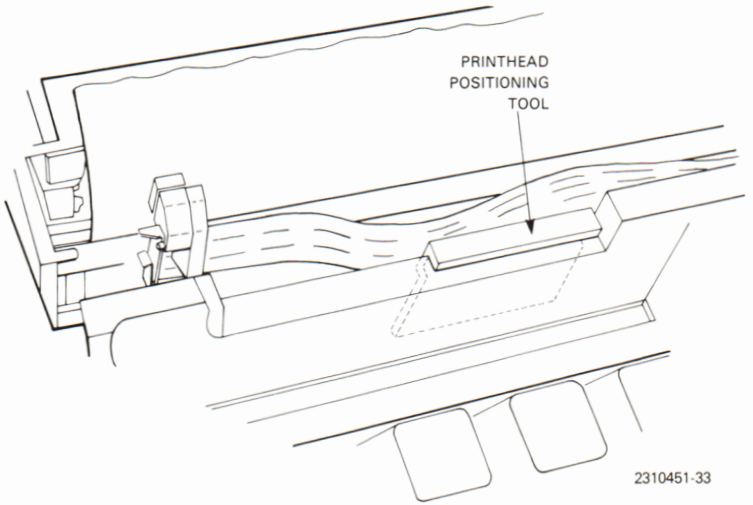
To replace the printhead follow this procedure.

1. Unlatch and open the paper compartment door.

2. If a software cartridge is installed in the terminal, move the printhead to the middle of the carriage, turn the terminal power off, remove the cartridge, and turn the power back on. If a cartridge is not installed, make sure the printhead is at the left margin by pressing the **RTN** key.

3. Remove the plastic printhead positioning tool from the package that contains the new printhead.

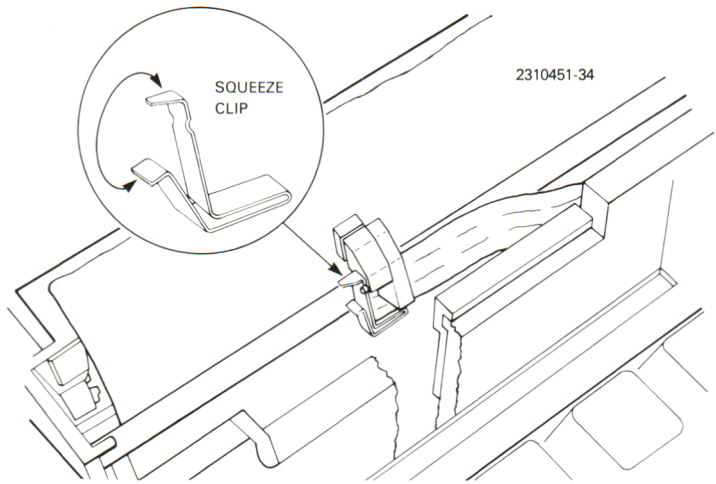
4. Install the printhead positioning tool in the cutout behind the cartridge slot, as shown.



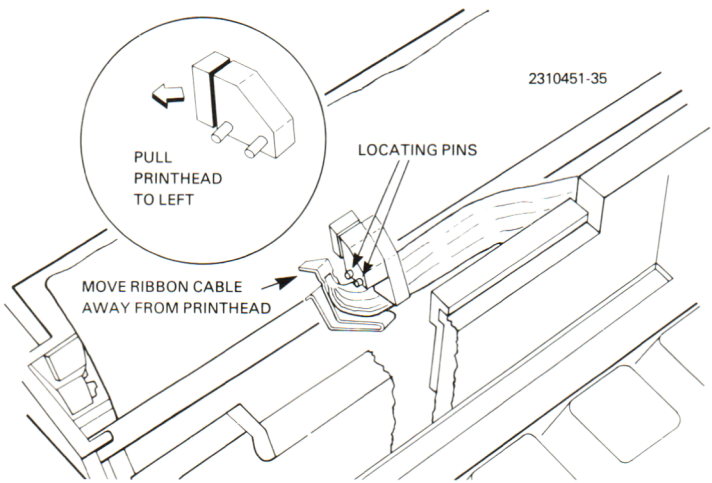
5. Press and hold the space bar until the printhead is stopped by the printhead positioning tool.

6. Place the **POWER** switch in the off position.

7. Locate the metal retaining clip on the left side of the printhead. Squeeze the clip to release it, then move the clip and ribbon cable away from the printhead.



8. Slide the printhead to the left, off of its two locating pins.

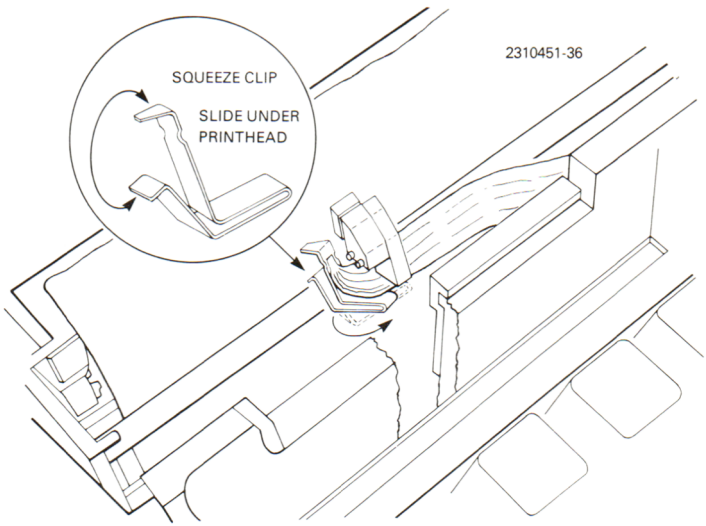


9. Slide a new printhead on the locating pins. The locating pins are more accessible if the carriage is lightly pulled away from the paper.

10. Replace the retaining clip/ribbon cable by:

    a. Squeezing the clip and sliding it under the printhead assembly.

    b. Lining up the locating pins with the grooves on the clip while installing it.



11. Press against the vertical portion of the clip to assure the ribbon cable is in full contact with the printhead.

12. Place the **POWER** switch in the on position. This moves the printhead to the left, away from the positioning tool.

13. Remove and discard the printhead positioning tool.

14. Feed the paper through the slot in the paper compartment cover and close and latch the cover.

15. Perform the barberpole test to verify that the printhead makes contact across the entire width of the paper.

5

Before Calling for Service

Introduction 5-3
Problem Solving Guide 5-4

INTRODUCTION

If your terminal does not operate properly, your first action should be an attempt to determine if the problem is being caused by your terminal, or by a device that is interfaced with your terminal. To make this determination, test the terminal's operation by running the terminal self-test (refer to "Turning On Your Terminal" in Chapter 2), and the barberpole test (refer to "Command Mode Description" in Chapter 2). These tests are summarized here.

The Power-up Self-test Sequence

1. Turn the **POWER** switch off
2. Turn the **POWER** switch on
   a. Three status lights go on
   b. Short audible tone
   c. Printhead moves to left
   d. Paper advances one line
   e. **CMD** and **LINE RDY** lights off
   f. **PWR** light remains lit
   g. Terminal prints: 703

The Barberpole Test Sequence

1. Turn the **POWER** switch on
2. Set **ONLINE** switch to offline
3. Press the **CMD** key
4. Press the **T** key
5. Barberpole is printed
6. Press **ESC** key to stop the test
7. Printout is legible

If the terminal operates properly during these tests, the problem may not be in your terminal. If the terminal does not operate properly during the tests, use the Problem Solving Guide as follows.

1. Find the problem in the Symptom column.

2. Follow the steps in the Possible Cause and Corrective Action column.

3. If the suggested corrective actions don't correct the problem, or if the problem symptom is not listed, return the terminal to your retailer or to a local service representative.

Symptom	Possible Cause and Corrective Action
PWR light is not lit	• Power cord is loose. — Ensure power cord is securely inserted in the terminal. — Ensure power cord is securely inserted in the wall outlet. • Bad wall outlet. — Check for power at the wall outlet by plugging a lamp into the outlet, or trying a different wall outlet.
Terminal has failed the power-up self-test	• Isolated failure? — Rerun the power-up self-test. • Repetitive failure? — Contact service.

Symptom	Possible Cause and Corrective Action
Paper does not advance	• Paper is not loaded properly. — Load paper as described in Chapter 1.
Audible error indication (long tone)	• An improper command mnemonic has been entered. — Enter a proper command mnemonic. (Refer to Chapter 2) • A receive buffer overflow error or a keyboard buffer overflow error has occured. — Isolated failure? No corrective action is necessary. Check, however, to see if received or transmitted data has been lost. — Repetitive failure, while transmitting to or receiving data from a particular host or device? Notify your contact at the host or system specialist.
Poor print quality	• Print too light or dark. — Adjust contrast as described in Chapter 4. — Replace the printhead. • No visible characters while printing. — Check that paper is loaded as described in Chapter 1. (Paper may be loaded upside down).

Symptom	Possible Cause and Corrective Action
	• Missing dots in the printed characters.
	— Check the ribbon cable and clip for proper installation.
	— Replace the printhead.
	• Adding dots to each printed character.
	— Replace the printhead.
Cannot connect with host computer	• Improper cabling.
	— Refer to Appendix B.
	• Host is set at an improper baud rate.
	— Ensure host is set at the proper baud rate.
	• External modem problem.
	— Consult your modem manual.
Data sent to host is not printed but received data is OK	• Local copy is required.
	— Select local copy.
Each character sent to host is being printed twice	• Local copy is not required.
	— Deselect local copy.
Printing unintelligible data when offline	• Adding or missing character dots.
	— Check ribbon cable and clip for proper installation.

Symptom	Possible Cause and Corrective Action
	— Replace printhead.
	• Data terminal malfunction.
	— Contact service.
Printing unintelligible data only when online	• Problems in an external device.
	— Ensure host is set for 300 baud.
	— Notify your contact at the host site.
	• Cable to host is too long.
	— Try a shorter cable.
	• Electrical interference at your site.
	— Try a shielded cable.
Error messages or other unexpected responses that are not defined in this manual	• Your terminal only acts as a communications interface to a larger host computer. It sends the characters you type, and prints data that is sent to you. If you can send and receive intelligible information, your terminal is working properly. Difficulties with your application should be discussed with your contact at your host computer.
	• If you are using an optional cartridge, refer to the cartridge user's guide.

A

ASCII Code

MSB / LSB	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	@	P		p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	[	k	{
C	FF	FS	,	<	L	\	l	|
D	CR	GS	-	=	M	]	m	}
E	SO	RS	.	>	N	^	n	~
F	SI	US	/	?	O	_	o	DEL

Printable Characters

Remote Command Control

Printer Control Characters

Codes Generated and Transmitted by the terminal

2310451-37

Control Characters
(From USA Standards Institute Publication X3.4—1968)

ACK	acknowledge	FF	form feed
BEL	bell	FS	file separator
BS	backspace	GS	group separator
CAN	cancel	HT	horizontal tabulation
CR	carriage return	LF	line feed
DC1	playback ON	NAK	negative acknowledge
DC2	record ON	NUL	null
DC3	playback OFF	RS	record separator
DC4	record OFF	SI	shift in
*DEL	delete	SO	shift out
DLE	data link escape	SOH	start of heading
EM	end of medium	STX	start of text
ENQ	enquiry	SUB	substitute
EOT	end of transmission	SYN	synchronous idle
ESC	escape (used for EDC)	US	unit separator
ETB	end of transmission block	VT	vertical tabulation
EXT	end of text		

*Not strictly a control character.

B

Hardware Interface Signals

EIA AND CCITT INTERFACE SIGNALS

The signals below are the EIA RS-232-C (CCITT compatible) interface signals used by the Model 703.

EIA RS-232-C Interface Signals used on the Model 703 Data Terminal

Data Set Connector Pin No.	Circuit EIA	Circuit CCITT	EIA Signal Name	In/Out
1	AA	101	Protective Ground	—
2	BA	103	Transmitted Data	Output
3	BB	104	Received Data	Input
4	CA	105	Request To Send	Output
5	CB	106	Clear To Send	Input
6	CC	107	Data Set Ready*	Input
7	AB	102	Signal Ground	—
8	CF	109	Received Signal Det.	Input
20	CD	108.2	Data Terminal Ready	Output
23	CH	111	Data Rate Selector	Output

*If the Data Set Ready signal is not present, the terminal will not attempt to transmit or receive data.

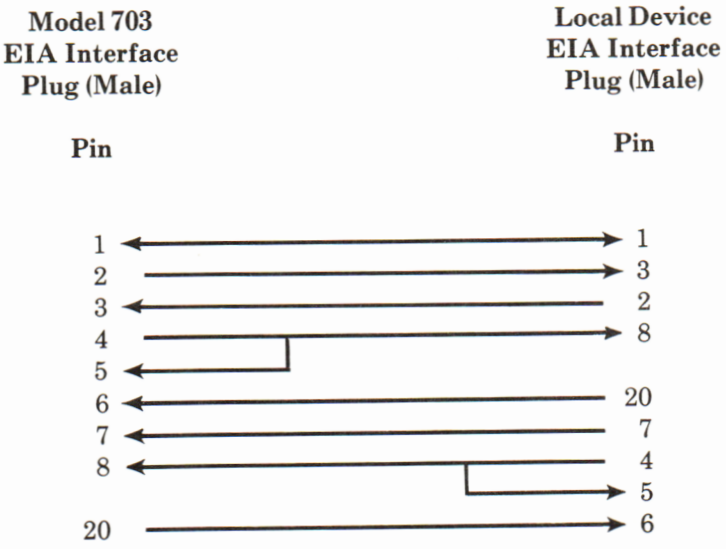
INTERFACE CABLE PIN CONNECTIONS

The following diagrams illustrate pin connections for three types of EIA interface cables used on the Model 703.

Local Device Interface Cable

The pin connections, for the optional EIA interface cable that connects the Model 703 to a local device, are shown in the following diagram. This type of cable is called a Data Terminal Cable.

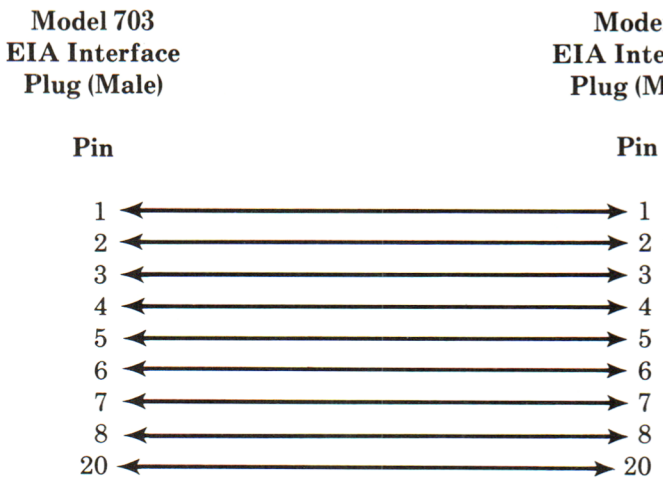
Data Terminal Cable
(TI Part No. 993239-0001)



External Modem Interface Cables

The pin connections, for optional EIA interface cables that are used to connect the Model 703 to two types of external modems, are shown in the following diagrams. This type of cable is called a Data Set Cable.

Data Set Cable
for 300 baud modems
(TI Part No. 993205-0001)



Data Set Cable
for high speed modems
with Speed Control option
(TI Part No. 2207634-0001)

Model 703 EIA Interface Plug (Male) Pin	Modem EIA Interface Plug (Male) Pin
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
20	20
23	23

C

Specifications

PRINTER

Method:	Nonimpact, thermal paper printing
Character set:	95 printable characters in normal mode with 33 ASCII or CCITT control characters when configured
Printhead:	Thermal with nine elements arranged in a column, electronically heated
Paper:	Thermographic Printing Paper, TI Part No. 972603 (white); 216 mm (8.5 in) x 30 m (100 ft); last 3.0 m (10 ft) color-coded
Printing rate:	45 cps
Printing direction:	Bidirectional
Line length:	Selectable as 80 cpl (10.2 cpi) or 132 cpl (17 cpi)
Horizontal character spacing, center to center ...	
Standard print:	2.49 mm (0.098 in)
Compressed print:	1.49 mm (0.059 in)
Lines per inch:	6 lpi

Vertical line spacing:

Center to center:	4.24 mm (0.166 in) ±0.38 mm (0.014 in)
Carriage return:	Automatic at column 81 or 133
Character size:	5 x 7 matrix with true descenders and underlining
Acoustic noise:	Not to exceed 50 dBa

PHYSICAL DIMENSIONS

Size:	298 mm (11.73 in) wide 215 mm (8.46 in) deep 70 mm (2.71 in) high
Weight: (includes one roll of thermal paper)	2.04 kg (4.5 lb) Wall transformer: 0.64 kg (1.4 lb) Maximum total weight: 2.68 kg (5.9 lb)

POWER REQUIREMENTS

Nominal voltage:	Domestic: 120 (90-134) Vac International: 220 (187-230) Vac 230/240 (196-264) Vac
Input frequency:	Domestic: 60 Hz, Single-phase International: 50 Hz, Single-phase
Power consumption:	Domestic: 35 W maximum at 90 Vac International: 35 W maximum at 187 Vac

TRANSIENT RESPONSE

Short-term transients:	±2000 Vdc pulse of 100 nsec or less rise time and a duration of 1 μsec maximum applied at any point on the input sine wave
Long-term transients:	±500 Vdc pulse of 1 usec or less rise time and a duration of 10 usec maximum applied at any point on the input sine wave

OPERATING ENVIRONMENT

Temperature:	10°C to 40°C (50°F to 104°F)
Relative humidity:	10% to 95% without condensation
Maximum altitude:	3000 m (10 000 ft)
Vibration:	0.5 G peak-to-peak @ 10 to 60 Hz
Shock:	0 G
Temperature shock:	Operate at 25°C (77°F), 50% relative humidity within 30 minutes after being stored for 2 hours at −30°C (22°F), 50% relative humidity

STORAGE ENVIRONMENT

The terminal, exclusive of the thermal paper, meets the physical and functional requirements of this specification.

With shipping container

Temperature:	−30°C to 70°C (−22°F to 158°F)
Relative humidity:	10% to 95% without condensation
Maximum altitude:	15 000 m (50 000 ft)
Cargo bounce:	Per Mil-Std-810B

Without shipping container

Temperature:	−30°C to 70°C (−22°F to 158°F)
Relative humidity:	10% to 95% without condensation
Shock:	40 G peak for 18 ms duration

INTERFACE SIGNAL LEVELS

Specification:	EIA/RS-232-C
Control lines:	On = +3 V to +25 V Off = −3 V to −25 V
Data lines:	Logic ONE (Mark) = −3 V to −25 V Logic ZERO (space) = +3 V to +25 V

DATA TRANSMISSION

Code specification:	ASCII
Standard:	ANSI Standard X3.4-1977

CHARACTER STRUCTURE

Standard:	ANSI Standard for Character Structure and Parity Sense, X3.16-1976. ANSI Standard for Bit Sequency of the USASCII Code, X3.15-1976
Transmitted characters:	One start bit, always 0 or spacing; seven data bits; one parity bit; two stop bits, always 1 or marking
Received characters:	One start bit, always 0 or spacing; seven data bits; one parity bit, one or two stop bits

PARITY STRUCTURE

Transmitted parity:	Selectable for even, odd, mark, or space parity
Received parity:	Not checked

REGULATORY CODE COMPLIANCE

The terminal meets the requirements of the specifications that apply at the point of sale. Following is a list of the specifications that may apply.

- UL Standard 478 (safety)
- IEC 380 (safety)
- CSA Bulletin 154 (safety), and DOC (communications)*
- VDE Specifications 871/B (EMI), and 800/804 (communications)*
- British Post Office — Datel Services Guide, Technical Guide 2*
- FCC Part 15, Subpart J, docket 20780 (EMI level B), and FCC Part 68 (communications)

* With appropriate transformer in use.

D

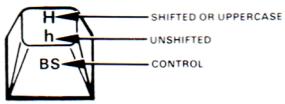
International Keyboards

The Model 703 Data Terminal can be ordered in the following international versions for operation with character sets and ac power which are standard for the country listed.

- Denmark/Norway
- France (Data Processing)
- France (Word Processing)
- Germany
- Spain
- Sweden/Finland
- Switzerland
- United Kingdom

This appendix shows the keyboard configuration and an ASCII code chart for each international version of the terminal. The keyboard drawings show every character associated with each key, *this is not intended to reflect the keyboard's labeling.*

KEY:



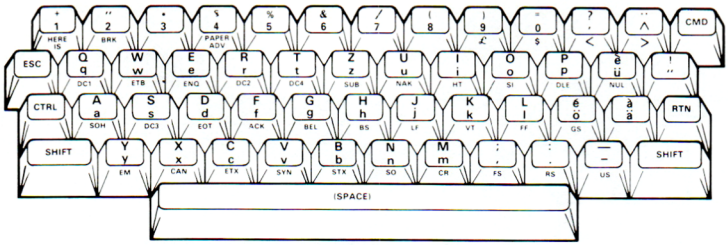
2310451-38

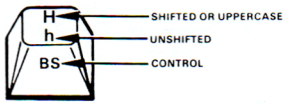
Denmark/Norway Keyboard Configuration

Denmark/Norway Keyboard ASCII Code

COLUMN / ROW	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	@	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	Æ	k	æ
C	FF	FS	,	<	L	Ø	l	ø
D	CR	GS	-	=	M	Å	m	å
E	SO	RS	.	>	N	^	n	~
F	SI	US	/	?	O	_	o	DEL

2310451-39





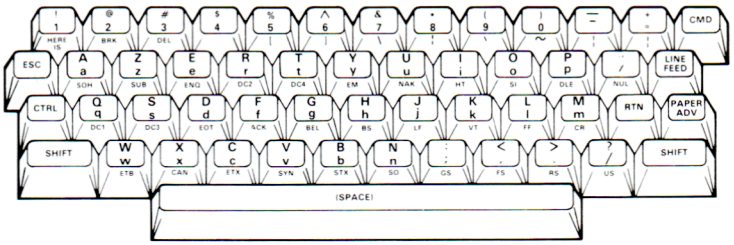
2310451-44

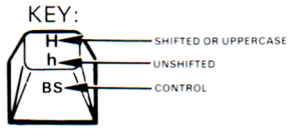
Germany Keyboard Configuration

Germany Keyboard ASCII Code

COLUMN / ROW	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	§	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	Ä	k	ä
C	FF	FS	,	<	L	Ö	l	ö
D	CR	GS	-	=	M	Ü	m	ü
E	SO	RS	.	>	N	^	n	ß
F	SI	US	/	?	O	_	o	DEL

2310451-45





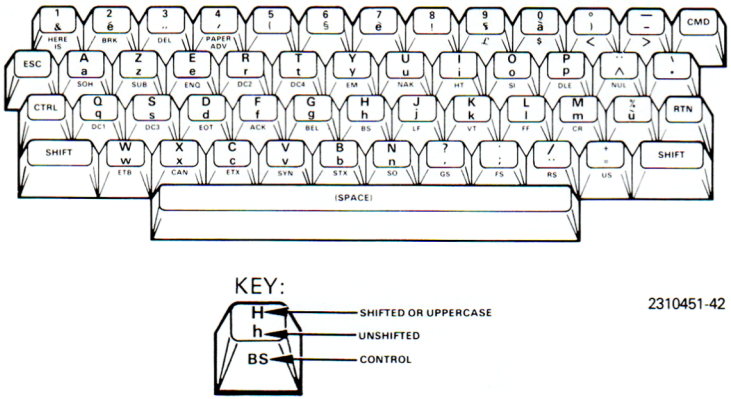
2310451-40

France DP (Data Processing) Keyboard Configuration

France DP (Data Processing) Keyboard ASCII Code

COLUMN / ROW	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	@	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	[	k	{
C	FF	FS	,	<	L	\	l	|
D	CR	GS	–	=	M	]	m	}
E	SO	RS	.	>	N	^	n	~
F	SI	US	/	?	O	_	o	DEL

2310451-41

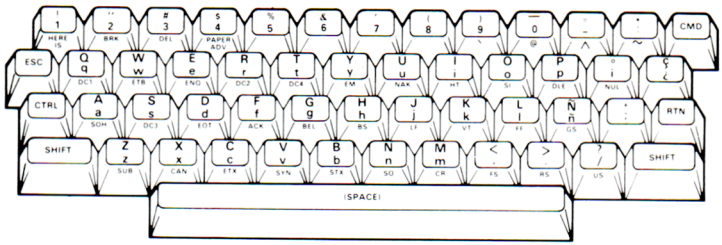


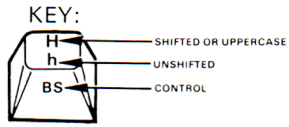
France WP (Word Processing) Keyboard Configuration

France WP (Word Processing) Keyboard ASCII Code

COLUMN / ROW	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	à	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	£	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	°	k	é
C	FF	FS	,	<	L	ç	l	ù
D	CR	GS	—	=	M	§	m	è
E	SO	RS	.	>	N	^	n	¨
F	SI	US	/	?	O	_	o	DEL

2310451-43





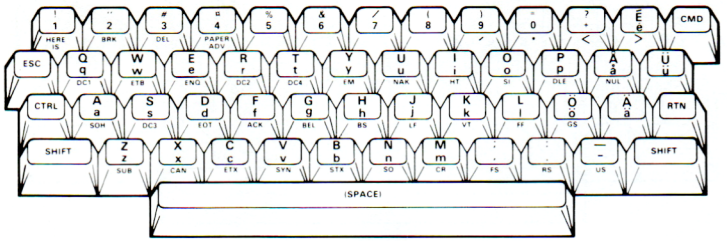
2310451-46

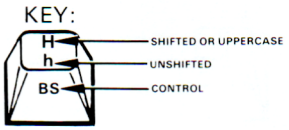
Spain Keyboard Configuration

Spain Keyboard ASCII Code

COLUMN / ROW	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	@	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	¡	k	º
C	FF	FS	,	<	L	Ñ	l	ñ
D	CR	GS	—	=	M	¿	m	Ç
E	SO	RS	.	>	N	^	n	~
F	SI	US	/	?	O	_	o	DEL

2310451-47





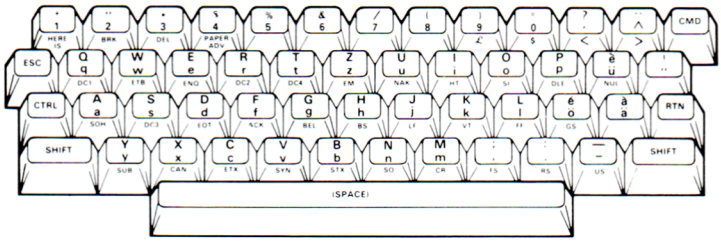
2310451-48

Sweden/Finland Keyboard Configuration

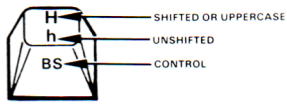
Sweden/Finland Keyboard ASCII Code

COLUMN / ROW	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	É	P	é	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	¤	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	Ä	k	ä
C	FF	FS	,	<	L	Ö	l	ö
D	CR	GS	–	=	M	Å	m	å
E	SO	RS	.	>	N	Ü	n	ü
F	SI	US	/	?	O	_	o	DEL

2310451-49



KEY:



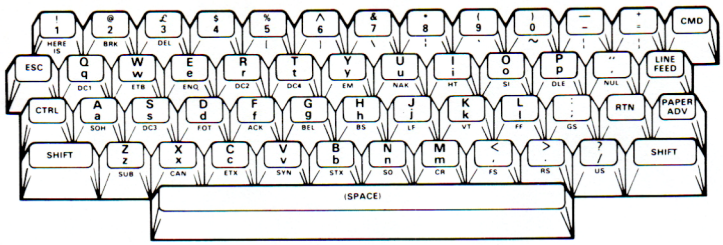
2310451-50

Switzerland Keyboard Configuration

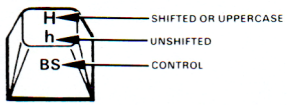
Switzerland Keyboard ASCII Code

COLUMN / ROW	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	à	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	£	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	é	k	ä
C	FF	FS	,	<	L	ç	l	ö
D	CR	GS	—	=	M	è	m	ü
E	SO	RS	.	>	N	^	n	¨
F	SI	US	/	?	O	_	o	DEL

2310451-51



KEY:



2310451-52

United Kingdom Keyboard Configuration

United Kingdom Keyboard ASCII Code

COLUMN / ROW	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	@	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	£	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	[	k	{
C	FF	FS	,	<	L	\	l	|
D	CR	GS	–	=	M	]	m	}
E	SO	RS	.	>	N	^	n	~
F	SI	US	/	?	O	_	o	DEL

2310451-53

Index

Title	Page
A	
Adjustment, print contrast	4-3
ABM (answerback memory)	3-9
ASCII code	A-1
Audible tones	3-16, 5-5
Auto-Access Cartridge	1-10
Automatic character repeat	3-7
B	
BACK SPACE key	3-11
Barberpole test	2-17, 5-3
BELL key	3-10
BREAK key	3-9
C	
Cable, interface	1-7
Carrying case	1-11
CCITT interface	B-1
Cleaning	4-3
Color-coded keyboard	3-4
Command:	
Key	3-8
Light	2-9
Test	2-16
Compressed printing	2-7
Configuration:	
Print	2-7
Terminal	2-3
Contrast, print	4-3

Control:
Characters 3-6
Key 3-8
Sequence 2-8
Cover, paper compartment 1-9

D
Data interface connection 1-6
DELETE key 3-10

E
Echo-plex 2-5
EIA interface 1-7, B-1
Environment 1-4
Error definitions 3-17
Escape:
Key 3-11
Sequence 2-8
External modem interface 1-8

F
Full-ASCII keyboard 3-4
Full-duplex 2-11

H
HERE IS key 3-9

I
Interface, data 1-6
International:
Keyboards D-1
Power requirements 1-4, C-2

K
Keyboard:
Buffer overflow 3-17, 5-5
Color-coding 3-4
International D-1
Layout 3-3
Operation 3-4

L
Lights, status 2-9, 3-14
LINE FEED key 3-12
LOCAL COPY switch 2-5
Local device interface 1-7, 2-12
Logging off 2-15
Logging on 2-15

M
Memory test 2-9
Mnemonics, EIA interface 3-15
Modem, external 1-8

O
Offline mode 2-3
Online:
  Mode 2-4
  Switch 2-4
Operation, keyboard 3-4
Options 1-10
Overflow errors 3-17, 5-5

P
Paper:
  Advance key 3-13
  Loading 1-9
Parity 2-6
Pencil switches 2-6
Power:
  Cord installation 1-5
  Light 2-9, 3-14
  Requirements 1-4, C-2
  Switch 1-5
Power-up self-test 2-9, 3-16
Print:
  Configuration 2-7
  Contrast 4-3
Printer test (barberpole) 2-17
Printhead replacement 4-4
Problem solving 5-4

R

Receive buffer overflow 3-16, 5-5
Remote device communications 2-13
RETURN key 3-4, 3-12

S

Self-test, power-up 2-9, 3-16, 5-3
SHIFT key 3-4
Shifted characters 3-6
Specifications C-1
Speed, transmission 2-12
Status lights 2-9, 3-14

T

Test command 2-17
Testing 5-3
Thermal printing paper 1-3, 1-9
Thumbwheel, print contrast 4-3
Transformer, power cord 1-3
Transmission speed 2-12

U

Unpacking 1-3
Unshifted characters 3-5
Uppercase:
  Characters 3-5
  Switch 2-5, 3-4
USASCII 3-4, A-1

V

Voltage 1-5, C-2

Glossary

acoustic coupler — a device for transmitting data through a telephone handset by converting electrical signals into audio signals, and vice versa.

answerback — a station's specific identifying code, automatically transmitted when a special request signal (the ENQ control character) is received or when the terminal's HERE IS function is initiated.

answerback memory (ABM) — the memory device that retains the terminal's answerback code.

ASCII — (**A**merican **S**tandard **C**ode for **I**nformation **I**nterchange) an 8 level (7 bits + parity) binary code. The ASCII code represents each letter, number, and symbol as a binary number.

baud, baud rate — a measure of signaling speed, equal to the number of discrete conditions or signal events per second.

beep — a short audible tone that alerts the operator of the occurrence of a particular event.

bit — (**bi**nary digit) in the binary notation, a bit is either the character 0 or 1.

buffer — a device or area of memory which is used to hold something temporarily. For example, the *keyboard buffer* contains the ASCII coded data that is entered from the keyboard.

character — one symbol of a set of elementary symbols, such as a letter of the alphabet; a character is made up of a group of seven bits in the ASCII code.

code — a system of symbols (bits) for representing data (characters).

computer — a data processor that can perform substantial computation, including numerous arithmetic operations, or logic operations, without human intervention during the run.

control character — a character whose occurrence in a particular context initiates, modifies, or stops a control function. In the ASCII code, any of the 32 characters in the first two columns of the standard code table.

data — a general term for any type of information.

data communications — the movement of computer-encoded information by means of communication transmission systems.

data link — the communication lines, modems, and communications controls of the stations connected to the line, used in the transmission of information between two stations.

data set — see modem.

duplex — two operations, such as transmitting and receiving; full-duplex means simultaneous transmission and reception, half duplex means transmission or reception, but not both at the same time. Half-duplex is also used (erroneously) to mean the absence of echo-plex, requiring the enabling of local copy.

echo-plex — a communication procedure wherein characters typed by the operator do not print directly on his/her printer, but are sent to a computer which echoes the characters back for printing. This procedure requires full-duplex communication facilities.

EIA — (Electronic Industries Association) the EIA Standard RS-232-C defines interconnection interfaces for terminals. The international counterpart of the EIA is the CCITT (Comite Consultatif Internationale de Telegraphie et Telephonie). The CCITT V24 interface standard is similar to the EIA Standard RS-232-C.

even parity — a system in which a parity bit is added to a word so that the total number of bits set is an even number. Compare with odd parity .

FCC — (Federal Communications Commission) a board of commissioners having the power to regulate all interstate and foreign electrical communications systems originating in the US.

firmware — the terminal's basic instruction set. The firmware program guides the terminal through the series of elementary tasks that make up each terminal operation. This program is contained in the microcomputer.

hardware — physical equipment, as opposed to a computer program or method of use, that is mechanical, electrical, magnetic, or electronic devices. Compare with software.

host computer — (also just host) the primary or controlling computer to which the terminal is connected by cable for communications.

interface — interconnection between two pieces of equipment having different functions.

keyboard — a group of keys on a pad used to input information into a computer system.

line, communications — cables, telephone lines, and so forth, over which data is transmitted to, and received from, the terminal. Also referred to as the "line."

mark — presence of a signal. In telegraphy, mark represents the closed condition or current flowing. It is equivalent to a binary one condition.

mark parity — a system in which the parity bit transmitted with a word is always set to 1.

memory — a storage area for binary data and programs. Also, any device which can store information.

menu — a displayed list of options from which the user selects an action to be performed by typing specified character.

modem — (**mo**dulator/**dem**odulator) a device which modulates and demodulates signals transmitted over communications facilities. The modulator is included for transmission and the demodulator for reception. Also called a data set.

mnemonic — symbol or symbols used instead of terminology more difficult to remember. Usually a mnemonic has one to three letters.

modulation — the process by which some characteristic of one signal is varied in accordance with another signal. This technique is used in modems to make computer signals compatible with communication facilities.

network — a series of points connected by a communication channel.

odd parity — a system in which a parity bit is added to a word so that the total number of 1 bits is odd. Compare with even parity.

offline — (local) refers to equipment or devices not connected to the communications line.

online — refers to equipment or devices connected to the communication lines under control of a processor either directly or through a communication system.

parity check — addition of noninformation bits to data, making the number of 1 bits in each grouping either always odd for odd parity or always even for even parity.

password — a word or string of characters that is recognizable by automatic means and permits a user access to protected storage, files, or input or output devices.

press — to momentarily push down on the designated key and release it. *Press and hold* means push down a key and hold it down while performing some other stated action (similar to the SHIFT key on a standard typewriter).

printer — the device that produces a paper copy of a document (hard-copy output).

software — a set of computer programs, procedures, rules, and associated documentation concerned with the operation of network computers, for example, compilers, monitors, editors, and utility programs. Compare with hardware.

space — usually equivalent to a binary zero condition.

space parity — a system in which the parity bit transmitted with a word is always set to 0.

terminal — a device or computer which may be connected to a local or remote host system, and for which the host system provides computational and data-access services.

USASCII — see ASCII.

PLEASE GIVE US A FEW MOMENTS OF YOUR TIME

This user's manual has been prepared with one major objective in mind; we want to make it easy for you to learn to use your Model 703 Data Terminal.

Please help us to accomplish this objective by taking a few moments to fill in this response sheet. Your honest appraisal of this manual will help us continue to provide you with the most effective possible documentation.

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   ☐ Considerable experience ☐ Some experience
   ☐ No experience

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   ☐ All of it ☐ Most of it ☐ Only some of it
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   _____

   What improvements would you suggest? _____

   _____

3. How would you rate the illustrations?
   ☐ Excellent ☐ Good ☐ Fair ☐ Poor

   Please explain: _____

   _____

4. Was the manual organized logically?
   ☐ Yes ☐ No

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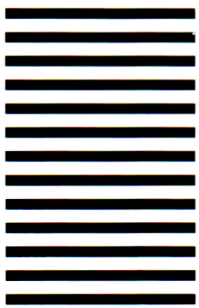

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